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10/783,328

02/20/2004

Alexander Sherman

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09/19/2008

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EXAMINER

SHAW, PELING ANDY

ART UNIT

PAPER NUMBER

2144

NOTIFICATION DATE

DELIVERY MODE

09/19/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| | | | |
|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 10/783,328 | Applicant(s) SHERMAN ET AL. | |
| | Examiner PELING A. SHAW | Art Unit 2144 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5-10 and 13-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 5-10 and 13-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Amendment received on 06/26/2008 has been entered into record. Amendment to drawings and specification are reviewed and accepted. Claims 1, 5, 9 and 15-17 are amended. Claims 2-4 and 11-12 are cancelled. Claims 1, 5-10 and 13-17 are currently pending.

Priority

2. This application has no priority claim made. The filing date is 02/20/2004.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeffords et al. (US 20010042139 A1), hereinafter referred as Jeffords in view of Janis (US 5263165 A), hereinafter referred as Janis and Satyanarayanan et al. (US 6662198 B2), hereinafter referred as Satyanarayanan.

- a. Regarding claim 1, Jeffords shows (claim 1) a method operative in a system in which a set of distributed servers accept object submissions (paragraphs 59-66: services on resource objects), comprising: in response to receipt of a submission of an object at a given server (paragraph 56: an replicate resource manager (RRM) process starts; paragraphs 59-66: instantiate, delete, change attribute, receive attribute changes), accepting the submission at the given server only if a given subset of the set of

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distributed servers reach an agreement to the submission (paragraph 56: contact all other RRM; paragraph 57: all active RRM processes are reporting the same state information about each other, synchronize resource pools; paragraph 228: commit until all resource managers in the resource pool confirmed the reception of and processing or synchronization), where the agreement is determined using a data exchange protocol (paragraph 57: network state has been achieved via resource manager state vector exchange protocol; paragraphs 170-175: relativistic state, voting and agreement) that indicates sub-steps as follows: passing a vector from a first server to a second server, the vector including a first indication that the first server has knowledge of the file (paragraph 57: network state has been achieved via resource manager state vector exchange protocol, the user of state matrices filled by vectors received at each resource manager); upon receipt of the vector at the second server, having the second server modify the vector to include, together with the first indication, a second indication that the second server also has knowledge of the file (paragraph 57: the user of state matrices filled by vectors received at each resource manager); having the second server pass the vector, which includes the first and second indications, to one or more other servers in the given subset (network state has been achieved via resource manager state vector exchange protocol); and upon a given state being reached, as indicated by at least the first and second indications in the vector, determining that the agreement has been reached (paragraph 56: contact all other RRM; paragraph 57: all active RRM processes are reporting the same state information about each other, synchronize resource pools; paragraphs 170-175:

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relativistic state, voting and agreement; paragraph 228: commit until all resource managers in the resource pool confirmed the reception of and processing or synchronization); and upon acceptance of the object submission, staging the object for subsequent transport (paragraph 28: receive all of the resource objects in the pools of interest; paragraph 57: synchronization of resource pools is initiated). Jeffords does not explicitly show an object could be a file; and the passing vector is a bit vector. However Jeffords does show (paragraph 28) an object is a resource; and (Fig. 4, 5 and 7; abstract, paragraphs 13-15, 179-182) state vector is used to keep track of states of objects.

- b. Janis shows (column 1, lines 33-41) access control on system resources such as files within a distributed data processing system having multiple resource managers in an analogous art of providing user access control within a distributed data processing system having multiple resource managers.
- c. Satyanarayanan shows (claim 15) transmitting in bits; and (paragraph 14) using a bit to indicate the archive status of backup in an analogous art of asynchronous transmission, backup, distribution of data and file sharing.
- d. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to modify Jeffords' functions of managing resources in a distributed application and maintaining a relativistic view of state with Janis' functions of providing user access control within a distributed data processing system having multiple resource managers; and Satyanarayanan's functions of using bit in representing a file status.

- e. The modification would have been obvious because one of ordinary skill in the art would have been motivated to explicitly managing file as resource object per Janis' teaching (column 1, lines 33-41) in distributive resource management application as per Jeffords (paragraph 1), Satyanarayanan (paragraph 32) and Janis (column 1, lines 24-31)' teaching. As one skill in the art of network management, the status of resource, e.g. read and write of file, are represented in flags or bits as the archive status per Satyanarayanan.
- f. Regarding claim 5, Jeffords shows wherein the accepting step includes having the given server determine its connectivity to the set of distributed servers prior to initiating the data exchange protocol (paragraph 57: establishes a dialog (connection)).
- g. Regarding claim 6, Jeffords shows wherein the accepting step includes having the given server deliver the file to those servers in the set of distributed servers to which the given server has connectivity (paragraphs 59-66: examine/use, instantiate and delete resource objects; paragraph 141: object transport including send and receive object's distributable representation).
- h. Regarding claim 7, Jeffords shows wherein the given subset of the set of servers is a quorum (see applicant's lines 1-3 on page 5: any required subset of all servers capable of accepting the file; paragraph 28: a resource manager specifies its pools of interest to all other active resource manager; paragraph 57: network state has been achieved; paragraph 150: RRM process has a consistent, synchronized view of the distributed memory in which it is interested).

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- i. Regarding claim 8, Jeffords shows wherein the quorum is a majority (see applicant's line 31 on page 4 to line 3 on page 5: any required subset of all servers capable of accepting the file; paragraph 28: a resource manager specifies its pools of interest to all other active resource manager; paragraph 57: network state has been achieved; paragraph 150: RRM process has a consistent, synchronized view of the distributed memory in which it is interested; paragraphs 170-175: relativistic state, voting and agreement).

Together Jeffords and Janis disclosed all limitations of claims 1 and 5-8. Claims 1 and 5-8 are rejected under 35 U.S.C. 103(a).

4. Claims 9-10 and 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeffords, Janis, Satyanarayanan and further in view of Phillips et al. (US 7058696 B1), hereinafter referred as Phillips.

- a. Regarding claim 9, Jeffords shows (claim 9) a method operative in a system comprising a set of distributed servers, wherein each server has the capability of accepting a object submission (paragraphs 59-66: services on resource objects), comprising: in response to receipt at a given server of a request to submit a object (paragraph 56: an replicate resource manager (RRM) process starts; paragraphs 59-66: instantiate, delete, change attribute, receive attribute changes), having the given server determine its connectivity to other servers of the set (paragraph 57: establishes a dialog (connection)); having the given server push the file to each of the other servers to the given server has connectivity (paragraphs 59-66: examine/use, instantiate and delete resource objects; paragraph 141: object transport including send

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and receive object's distributable representation); if the object has been successfully pushed to each of the other servers, having the given server initiate a data exchange protocol to each of the other servers to which the given server has connectivity (paragraph 57: establish a dialog (connection), network state has been achieved via resource manager state vector exchange protocol), where the data exchange protocol includes sub-steps as follows: passing a knowledge vector among the given server and the other servers (paragraph 57: network state has been achieved via resource manager state vector exchange protocol, the user of state matrices filled by vectors received at each resource manager); having each server that receives the knowledge vector modify the knowledge vector to indicate that server's knowledge of the file (paragraph 57: the user of state matrices filled by vectors received at each resource manager); and based on the knowledge vector as modified (paragraph 57: the user of state matrices filled by vectors received at each resource manager), determining whether a quorum of the servers have reached a given state (see applicant's lines 1-3 on page 5: any required subset of all servers capable of accepting the object; paragraph 28: a resource manager specifies its pools of interest to all other active resource manager; paragraph 57: all active RRM processes are reporting the same state information about each other, network state has been achieved; paragraph 150: RRM process has a consistent, synchronized view of the distributed memory in which it is interested); when the quorum of servers reach the given state, accepting the object for submission (paragraph 228: commit until all resource managers in the resource pool confirmed the reception of and processing or synchronization). Jeffords

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- does show (paragraph 28) an object is a resource; and (Fig. 4, 5 and 7; abstract, paragraphs 13-15, 179-182) state vector is used to keep track of states of objects. Janis shows (column 1, lines 33-41) access control on system resources such as files within a distributed data processing system having multiple resource managers. Satyanarayanan shows (claim 15) transmitting in bits; and (paragraph 14) using a bit to indicate the archive status of backup. None of Jeffords, Janis, Satyanarayanan shows encoding given information about the file into a temporary identifier; and having the given server output the file and its associated temporary identifier to each of the other servers to which the given server has connectivity.
- b. Phillips shows encoding given information about the file into a temporary identifier (column 16, line 45 to column 17, lines 5: one time password, bidirectional encryption/decryption key); and having the temporary identifier output to each of the other servers to which the given server has connectivity (Fig. 5: invite user; column 16, lines 21-44: invite a new user) in an analogous art of Internet-based shared file service with native PC client access and semantics.
- c. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to modify Jeffords' functions of managing resources in a distributed application and maintaining a relativistic view of state with Janis' functions of providing user access control within a distributed data processing system having multiple resource managers, Satyanarayanan's functions of using bit in representing a file status and Phillips' functions of using one time password to encrypt and decrypt access information.

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- d. The modification would have been obvious because one of ordinary skill in the art would have been motivated to explicitly managing file as resource object per Janis' teaching (column 1, lines 33-41) and using one time password to encrypt and decrypt access information per Phillips' teaching (column 16, line 45 to column 17, lines 5) in distributive resource management application as per Jeffords (paragraph 1), Janis (column 1, lines 24-31), Satyanarayanan (paragraph 32) and Phillips (column 34, lines 32-53)' teaching
- e. Regarding claim 10, Phillips shows wherein the temporary identifier comprises given information, the given information selected from a set of information that includes a filename, a timestamp, an identifier for the server at which the request is received, and a random string (column 19, line 45-column 20, lines 5: identifier of virtual storage device and a random string).
- f. Regarding claim 13, Jeffords shows wherein the quorum is a majority (see applicant's line 31 on page 4 to line 3 on page 5: any required subset of all servers capable of accepting the file; paragraph 28: a resource manager specifies its pools of interest to all other active resource manager; paragraph 57: network state has been achieved; paragraph 150: RRM process has a consistent, synchronized view of the distributed memory in which it is interested; paragraphs 170-175: relativistic state, voting and agreement).
- g. Regarding claim 14, Jeffords shows wherein the quorum is a given subset of the set of servers (see applicant's lines 1-3 on page 5: any required subset of all servers capable of accepting the file; paragraph 28: a resource manager specifies its pools of interest

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- to all other active resource manager; paragraph 57: network state has been achieved; paragraph 150: RRM process has a consistent, synchronized view of the distributed memory in which it is interested).
- h. Regarding claim 15, Jeffords ~~shows~~ further including at each server of the quorum and after the file is accepted: storing the file persistently in a local file system (paragraphs 59-66: instantiate, delete, change attribute, receive attribute changes). Phillips ~~shows~~ removing the temporary identifier (column 16, line 45 to column 17, lines 5: one time password, bidirectional encryption/decryption key).
 - i. Regarding claim 16, Jeffords ~~shows~~ further including staging the file for subsequent delivery (paragraph 28: receive all of the resource objects in the pools of interest; paragraph 57: synchronization of resource pools is initiated).
 - j. Regarding claim 17, Jeffords ~~shows~~ further including having the given server issue a reply to a requesting client that the file submission was successful (paragraph 231: return when all available RMs and each of those RMs has synchronized with the new RM).

Together Jeffords, Janis, Satyanarayanan and Phillips disclosed all limitations of claims 9-10 and 13-17. Claims 9-10 and 13-17 are rejected under 35 U.S.C. 103(a).

Response to Arguments

5. Applicant's arguments filed on 06/26/2008 have been fully considered, but they are not persuasive.

- a. Applicant has amended independent claims 1 and 9 with the limitations of "passing a bit vector from a first server to a second server, the bit vector including a first indication that the first server has knowledge of the file", "upon receipt of the bit vector at the second server, having the second server modify the bit vector to include, together with the first indication, a second indication that the second server also has knowledge of the file", "having the second server pass the bit vector, which includes the first and second indications, to one or more other servers in the given subset" and "upon a given state being reached, as indicated by at least the first and second indications in the bit vector, determining that the agreement has been reached". Examiner has reviewed the amended claim changes in light of applicant's original specification and claim set. Examiner has reviewed claim rejections and applied prior arts as per Office Action mailed on 12/26/2007. Examiner has searched on the amended and found Satyanarayanan in addition to Jeffords, Janis and Phillips have all limitations of current claimed invention. Claim rejections are updated to reflect amended claim changes and cited references from Jeffords, Janis, Satyanarayanan and Phillips.
- b. Applicant argues that Jeffords, Janis and Phillips together do not show the limitations of receiving and modifies bit vector for agreement on file submission. The updated

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claim rejections should address applicant's argument. In addition, the following notes are provided.

- c. Jeffords has shown (paragraphs 14, 161, 171-175 and 182) using state vector exchange to determine if object states are equal as in task coordination, voting and agreement paradigms. Jeffords has shown (paragraphs 8, 41, 135, 212 and 223) replicating resource, data, object or state. Janis is brought in to show (column 1, lines 33-41) access control on system resources such as files within a distributed data processing system having multiple resource managers. Jeffords has further shown (paragraphs 144, 165 and 227-228) a commit on resource object changes is done through synchronization or agreement. Together Jeffords and Janis have shown using state vector exchange for synchronizing resource object exchange as a resource could be a file. One skill in the art would know how to use a bit representation for various states or status of process or objects (Satyanarayanan), including archive (Satyanarayanan), read, write, voting, agreement (Jeffords). In combination, Jeffords, Janis and Satyanarayanan have taught and suggested all the argued limitations.

Conclusion

6. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Refer to the enclosed PTO-892 for details.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peling A. Shaw whose telephone number is (571) 272-7968. The examiner can normally be reached on M-F 8:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William C. Vaughn can be reached on (571) 272-3922. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

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applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/P. A. S./

Examiner, Art Unit 2144

/William C. Vaughn, Jr./

Supervisory Patent Examiner, Art Unit 2144